

# Democracy and Deprivation: Does Media Freedom Make a Difference?

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## Abstract

The leading models in the political economy literature imply that the survival of democratic and autocratic leaders is not determined by the preferences of the poor. That suggests that enfranchisement may not lead to a reduction in deprivation. In response, the authors argue that deprivation-reduction is the result of the interaction between democracy and media freedom. Using a panel of 167 countries for the years 1994-2011 the authors find evidence that media freedom influences the extent to which democracy reduces deprivation, as measured by under-5 mortality.

It is often argued that democratic governments are better at advancing the life quality of their citizens than their autocratic counterparts. In support of that general claim there are a growing number of cross-national studies that purport to show that democracies produce healthier, more educated and better nourished populations than autocracies.<sup>1</sup> The prevailing explanation for this linkage between regime-type and life quality in the political economy literature is that elected representatives must satisfy a greater number of supporters and, therefore, ensure that welfare-promoting resources reach a larger share of the population. It is not immediately obvious, however, that democracies are better at promoting the well-being of the poorest members of society. It remains possible that democratic regimes will not target welfare transfers and public goods to the low-income group because their votes are not required in order to secure a winning majority. Enfranchisement may lead to an improvement in the life quality of middle-income citizens, whose preferences typically determine public policy, but not the life quality of low-income citizens. It may be argued, therefore, that the introduction of universal suffrage may not lead to a reduction in deprivation (Mulligan, Gil, and Sala-i-Martin 2004; Ross 2006).

In response to that challenge we consider whether the protection of media freedom that typically accompanies the expansion of the franchise helps to explain why democracies are more favorable to the poor than autocracies. We argue that democratic governments have more of an incentive to seek the economic benefits – economies of scale, positive externalities and enhanced productivity - associated with deprivation reduction. Thus, the poorest stand to gain even if we assume that democratic leaders do not directly require their electoral support. In addition, democracies are better equipped to reduce deprivation because the greater protection they afford to free speech, and especially media freedom, enhances government responsiveness. Our central claim is that those two factors – economic incentives and communication openness – combine to explain why democracies are better for the poor than autocracies. The economic benefits of deprivation reduction provide democratic governments with an incentive to target resources towards the poor, whilst media freedom enables them to achieve that goal.

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<sup>1</sup> See for example, Besley and Kudamatsu 2006; Blaydes and Kayser 2011; Brown 1999; Gerring, Thacker, and Alfaro 2012; Lake and Baum 2001; Mackenbach, Hu, and Looman 2013; Wigley and Akkoyunlu-Wigley 2011.

The article is divided into two main parts. In the first part we examine the two leading models in the political economy literature and conclude that, by themselves, they fail to explain why democratic regimes might be better for the poor than autocratic regimes. We then develop the claim that the performance advantage of democracies is explained by the interaction between regime-type and media freedom. In the second part we test the thesis that the reductive effect of democracy on deprivation is dependent on the level of media freedom. Using an annual panel of 167 countries for the years 1994 to 2011 we find evidence that media openness amplifies the reductive effect of democracy on deprivation.

## **1. The Political Economy of Deprivation**

We begin by considering two influential models of the effects of regime-type on government spending. Both models are based on the impact of the size of the regime's support base on government spending. The first model focuses on the redistribution of income, while the second model focuses on the provisioning of public goods. We argue that neither approach, in themselves, allows us to conclude that democracies will tend to be more favorable to the poor than autocracies. Rather that conclusion only follows once we take account of the greater incentive that democratic governments have to invest in the human capital of the poorest and the higher degree of communication openness that characterizes democratic societies.

### **Median voter theory**

Meltzer and Richard have presented perhaps the most influential political economy model of the effects of regime-type on the redistribution of income (Acemoglu and Robinson 2006; Boix 2003; Meltzer and Richard 1981). They argue that democratization amounts to the extension of political rights from the wealthy elite to the rest and, therefore, that it grants influence to those who will benefit from redistribution. If the income of the median voter – whose preferences determine government policy – is below the average they will demand redistributive spending up to the point at which the distortionary effects of taxation (such as the negative incentive effect on effort and investment) lead to

a decrease in tax revenue. Thus, the Meltzer-Richard model predicts that democracies will redistribute more than autocracies because the median voter is typically further down the income distribution. Even if that is correct, however, it is by no means clear that the members of low-income group stand to benefit. Candidates for election may target income redistribution so as to capture the votes of the middle-income group, which typically contains the median voter. Thus, it is possible that the low-income group will benefit little from the redistributive effects of democratization (Ross 2006). Although, median voter theory does predict that enfranchisement will lead to a decrease in absolute deprivation in those cases where the income distribution is strongly right-skewed – in other words, when the median voter is unable to achieve an adequate standard of living. However, even in those cases the theory does not allow us to predict a reduction in deprivation amongst those further down the income distribution.

### **Selectorate theory**

The Meltzer-Richard model did not permit us to conclude that democratization has a positive impact on the poorest because electoral winners can pinpoint the beneficiaries of income redistribution. Perhaps, therefore, the pro-poor credentials of democracy can be established if we focus our attention on the effect of regime-type on the provisioning of public goods. Bueno de Mesquita and colleagues have developed an influential account of the impact of enfranchisement on the production of public goods (Bueno de Mesquita 2003; Bueno de Mesquita et al. 2002). According to their selectorate theory the widening of the support base required for a government to stay in office generates a trend away from targeted private benefits (such as direct payments, access to hard currency and grants of monopolies) and towards public goods. Private goods will constitute a large proportion of the benefits that are provided by a government that only requires a narrow set of backers in order to survive. That is because it is less costly to enrich the few than to use public goods in order to benefit everyone. In addition, there is a risk that the production of public goods would establish the conditions for a successful revolt by those currently lacking political influence. An increase in educational attainment, for example, may pose a threat to the ruling elite (Bueno de Mesquita and Smith 2009). However, as the

required number of backers expands it becomes more cost-effective for the government to maintain support by producing public goods. Thus, as suffrage is extended private goods represent an increasingly smaller proportion of the benefits doled out by the government.

The question is whether the increase in the production of public goods that follows from the expansion of political rights will also benefit the poor. The kind of publicly provided resources that would be of most value to the worst-off (e.g. access to health practitioners, pharmaceuticals and teachers) are neither non-rival nor non-excludable. Thus, it remains possible that low-income voters will be denied sufficient access to social services because they are not required in order to win the election. That possibility becomes more likely if, perhaps because of the perceived lack of political influence, it turns out that poorer citizens are less politically active than their upper and middle income counterparts. Thus, it is not immediately obvious that the greater emphasis that democracies place on public goods will entail that they are more pro-poor than autocracies. The selectorate theory of public goods provisioning appears to take us no further than the median voter theory of income redistribution. As with welfare transfers, it would seem that public goods provisioning may be tailored so as to capture the support of the median voter.

### **Human Capital Formation**

The median voter and selectorate theories, by themselves, suggest that the survival of democratic and autocratic leaders is not determined by whether they have the support of the low-income group. We now argue that democratic governments have reason to reduce deprivation irrespective of whether they require the support of the poorest citizens. The argument appeals to three crucial differences between public goods and welfare transfers. Public goods such as health care and education generate economies of scale, produce positive externalities and enhance worker productivity. Those three factors mean that the decisive middle-income voters have a vested interest in extending access to low-income voters. Firstly, the public provisioning of health and educational resources with high fixed costs, such as hospital and school buildings, means that access can be extended to additional citizens at low marginal cost. Secondly, middle-income voters may receive spillover benefits from improvements in the health

and education of the poorest. For example, health interventions such as vaccinations will help to prevent the spread of contagious diseases. Equally, providing health care and schooling to the low-income group may help to reduce the possibility of social unrest. Thirdly, and more importantly, middle-income voters may benefit from the effect of human capital formation on economic growth. Democratic governments will tend to prioritize the expansion of human capital amongst the decisive middle-income voters. However, those voters will also recognize the further growth dividends to be gained from investing in the health and education of the poorest. There is a clear link between educational attainment and human capital accumulation. Health care provisioning also increases the stock of human capital because healthier workers are more productive, disease-free children tend to learn more and the incentive to privately invest in education increases as survival rates improve (Bleakley 2007; Soares 2005). Thus, the chances of poorer citizens being neglected are less than would be the case if welfare transfers represented the only redistributive instrument available to democratic governments.<sup>2</sup>

It should be noted, however, that autocratic regimes may also wish to take advantage of the benefits associated with health and education, especially the growth dividends associated with human capital formation. A regime without access to free resources (i.e. natural resource rents and foreign aid) must rely on economic growth in order to increase the tax revenue to be divided amongst its narrow support base (Besley and Kudamatsu 2008). In addition, growth will enhance the regime's ability to deal with exogenous shocks such as natural disasters and recessions. As a result autocratic leaders also have an incentive to increase the productivity of the worst-off by granting them access to free schooling and medical care. At the same time, however, they will be averse to investing in human capital for fear of creating a new economic class that will ultimately threaten their grip on power.<sup>3</sup> Autocratic leaders without access to non-tax revenues must balance the cost of not enabling economic growth against the

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<sup>2</sup> In a similar vein Lizzeri and Persico (2004) argue that the industrial elite in nineteenth century Britain supported spending on preventative health measures and public education so as to minimize their exposure to disease and to create a more educated labor force. They go on to argue that it was in the self-interest of the majority of the elite to extend the franchise during the 1800's because it increased the likelihood of policy-making orientated towards those kinds of public goods, rather than targeted spending.

<sup>3</sup> See, for example, Lindert (2004) and Ansell (2010).

risk of empowering the low-income group. In addition, resource-rich autocracies have even less, if any, incentive to invest in the productivity of its citizens. We assume, therefore, that autocracies will typically invest less in the health and education of the low-income group than democracies.

So far we have argued that democratic leaders have a greater incentive to reduce deprivation even if it turns out that they do not require the support of the poorest in order to achieve a winning majority. That is, democratic leaders have a greater incentive to pursue the scale economies, positive externalities and, especially, productivity gains associated with deprivation-reduction. We now turn to examine the crucial role of media freedom.

## **2. Communication Openness**

The existing evidence suggests that the key to reducing deprivation lies with the targeting of public resources, rather than the magnitude of those resources (Bidani and Ravallion 1997; Filmer and Pritchett 1999; McGuire 2006). We have already noted that democratic governments have greater reason to target the low-income group even if they do not require their electoral support. However, we contend that targeting, by itself, does not completely explain the comparative advantage of democratic governments over their autocratic counterparts. Deprivation-reduction crucially depends on how effectively the poor is targeted. Whether public resources are effectively targeted towards the poor depends, in turn, on the quality of the information available to the government and its citizens. Democracies are able to supply higher quality information than autocracies because they typically afford greater protection to freedom of expression, most notably media freedom.<sup>4</sup> As we will shortly argue, media freedom helps to ensure that the right kind of resources actually reach those that need them the most. Thus, democratic governments are better for the poor both because they have more of an incentive to reduce deprivation and because they are characterized by a higher degree of communication openness. However, neither of those factors by themselves is sufficient to explain why

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<sup>4</sup> The crucial role of media openness in human development is noted by Amartya Sen (1999; 2009). This is in keeping with his seminal finding that a famine has not occurred in an independent country that is characterized by regular and competitive elections as well as a relatively free press (Sen 1980, 1999).

democracy is better for the poor. Rather, both factors working together explain the performance advantage of democratic governments. Thus, the reductive effect of democracy on deprivation depends on the level of media freedom. By the same token, the reductive effect of media freedom on deprivation depends on the level of democracy.

In order to flesh out the details of this argument we firstly clarify the role that media freedom plays in reducing deprivation and then outline the reasons why democracies have freer media than autocracies. Communication openness enables deprivation-reduction because it helps to overcome two potential sources of imperfect information. One concerns the information available to the government, while the other concerns the information available to citizens. In the first case the government will be better informed about the need for intervention (e.g. disease outbreak) as well as the success of its poverty-reducing policies (e.g. whether government policy is being properly implemented by government officials). In the second case, citizens will be better informed about the actions of the government, such that it will be more difficult to hide policy failure. As we have seen, democratically elected governments may not be accountable to the low-income voters, but they are accountable to the pivotal middle-income voters who, in turn, have a vested interest in the productivity of the poorest. The presence of an independent and uncensored media means that those pivotal voters are better placed to assess the government's attempts to improve the living standards – and, thereby, productivity - of the worst-off members of society.

We now turn to examine why democracies have freer media. We assume that democratically elected leaders have an incentive to hide from the glare of media scrutiny. That is because the presence of asymmetric information between elected officials and their citizens enables them to pursue policies that are more in their interests than in the interests of the latter (Stiglitz 2002). At the same time, however, the restriction of media freedom may threaten their political survival. That is because the denial of media freedom may prevent them from receiving the feedback they require to successfully implement the policies demanded by the middle-income voters. More significantly, those voters are in a position to demand the continued protection of civil liberties such as media freedom. In other words, the decisive voters will insist on an independent and uncensored media so as to enhance their ability to



select and discipline elected officials. We would expect, therefore, that the expansion of the franchise will lead to an increase in the protection of media freedom.

Autocratic leaders are typically averse to allowing open communication for fear that it will enable opposition movements to overcome the coordination problems in revolt. That is to say, dictators will want to prevent each citizen from becoming aware that there are other citizens who are likewise negatively affected by the government policies and that there are a sufficient number of them to make a revolution viable. If a citizen realizes that her fellow citizens are unaware of the government's failings, then it will not be in that individual's interest to challenge the government. By contrast, if a sufficient number of citizens are aware of the government's failings, then it is in their interests to challenge the government. Thus, preventing citizens from using media to obtain that common knowledge is vital to the survival of the regime. Indeed there is some evidence that non-democratic leaders recognize that controlling the media, and especially television, is more important than controlling the judiciary and opposition political parties (McMillan and Zoido 2004).

Nevertheless, non-democratic leaders face a trade-off when it comes to controlling media outlets. While restrictions on the flow of information increases the likelihood that the regime will survive, it also diminishes the ability of the regime to ascertain whether its policies are having the desired effect – in the absence of reliable feedback the government cannot be sure that it has selected the right policies or that low-level bureaucrats are properly implementing the government's policies.<sup>5</sup> In short, citizens will be less informed, but so will the government. Perhaps in order to rectify the information deficit, a number of autocratic regimes (especially those without access to free resources) are characterized by a surprisingly high degree of media openness (Egorov, Guriev, and Sonin 2009; See also King, Pan, and Roberts 2013; Lorentzen 2013). Nevertheless, the autocratic rulers must still take into account the possibility that an opposition movement will use media to solve the coordination problem in revolts. Thus, we assume that democratic regimes will, with rare exception, be characterized

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<sup>5</sup> This shortcoming of autocratic rule was explicitly acknowledged by Chairman Mao after the devastating famine which killed millions in China between 1958-1961 (Sen 2009, p. 345) as well as by Mikhail Gorbachov after he became the leader of the Soviet Union in the mid-1980s (Egorov, Guriev, and Sonin 2009, p. 645).

by a higher degree of media freedom than autocratic regimes.

The theoretical position we are defending in this article may be summarized as follows. The two leading political economy models, by themselves, do not allow us to make the prediction that democracy is better for the poor than autocracy. Nevertheless, scale economies, positive externalities and especially worker productivity provide democratic governments with more of an incentive to reduce deprivation even if they do not require the electoral support of low-income voters. Equally, the greater media freedom that typically accompanies the introduction of universal suffrage helps to ensure that public resources are effectively targeted towards the low-income group. In sum, democratic governments have a greater incentive as well as the greater ability to reduce deprivation. We hypothesize, therefore, that deprivation-reduction is a function of the interaction between the level of democracy and the level of media freedom.

With respect to the empirical literature there are a small number of studies which purport to show that the extent to which democratic procedures have been institutionalized is associated with a reduction in child mortality.<sup>6</sup> On the other hand there is only mixed evidence that the level of democracy at each point in time is associated with a reduction in child mortality.<sup>7</sup> In addition there is a nascent political economy literature on the positive effects of media on public policy.<sup>8</sup> As far as we are aware, there is no existing study which examines the impact of media freedom on deprivation. Our aim in the present study is to steer a path between these two related literatures. That is, we aim to show that the reductive effect of the level of democracy on deprivation (as measured by child mortality) is dependent on the level of media freedom.

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<sup>6</sup> See Besley and Kudamatsu (2006) and Gerring, Thacker, and Alfaro (2012).

<sup>7</sup> Using a large sample of countries for a long time frame and controlling for country-specific effects (Ross 2006) finds no evidence that the level of democracy is associated with a reduction in infant and child mortality. For important evidence to the contrary see Kudamatsu (2012). Moreover, Martel García (Martel García unpublished) finds that that Ross's results do not hold after necessary corrections are made to the imputation model.

<sup>8</sup> See, for example, Besley and Burgess 2002; Djankov et al. 2003; Reinikka and Svensson 2005; Stromberg 2004.

### 3. Model, Variables and Data

In order to examine whether media freedom conditions the impact of democracy and health expenditure on child mortality we employ a panel of 167 countries for each year from 1994-2011. The multiplicative model we employ allows us to test whether media freedom conditions the impact of democracy (as measured by competitive participation) on child mortality. It takes the following form.

$$\ln(\text{Under5 mortality})_{it} = \beta_0 + \beta_1 \ln(\text{Under5 mortality})_{it-1} + \beta_2 \text{Media Freedom}_{it-1} + \beta_3 \text{Competitive Participation}_{it-1} + \beta_4 \text{Media Freedom}_{it-1} \times \text{Competitive Participation}_{it-1} + \beta_5 \ln(X)_{it-1} + u_{it-1}$$

Where  $i$  is the country,  $t$  is the year and  $X$  is the set of control variables. In order to take into account the possibility of unmeasured country-specific factors such as culture or climatic conditions we include country fixed-effects. In addition, we include year dummies so as to control for the possibility of a spurious correlation between the political variables and child mortality. That is necessary given that there was a downward trend in child mortality around the world over the last 20 years (Hill et al. 2012). Finally, we include the lag of the dependent variable to correct for the detected presence of autocorrelation as well as the lag of the independent variables to reduce endogeneity.

#### Dependent variable

Our measure of deprivation is the probability, per 1000 live births, that a newborn baby will die before reaching the age of five (*Under-5 mortality*).<sup>9</sup> Child mortality tends to be concentrated amongst the least-advantaged members of society in developed and especially developing countries (de Looper and Gaetan 2009; Yazbeck 2009). What is more, child mortality typically results from causes that are comparatively easier and less costly to prevent (e.g. through access to clean water, antibiotics, perinatal

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<sup>9</sup> Our data source for under-5 mortality is Inter-Agency Group for Child Mortality Estimation (IGME) (2013). The IGME estimates cover every country-year for the period under study. For a detailed explanation of how the IGME estimates were produced see Hill et al. (2012).

and postnatal medical care etc.). Thus, we would expect that child mortality rates amongst the poor will be especially sensitive to the public provisioning of health-promoting resources. By contrast we would expect that child mortality rates amongst the non-poor will not be particularly sensitive to government provisioning. That is because non-poor families will relocate their private funds when the government fails to provide sufficient mortality-averting resources.<sup>10</sup> Finally, we assume that it becomes increasingly difficult to achieve a marginal decrease in under-5 mortality as its level is lowered. Thus, in the empirical analysis that follows we take the log transformation of the dependent variable.

### **Independent variables**

The *competitive participation* variable is based on the two defining characteristics of regime type, the competitiveness of the political process and the extent of participation in the political process. For the first component we rely on the Polity2 index compiled by the Polity IV project (Marshall and Jaggers 2011).<sup>11</sup> The Polity2 index is based on the extent to which political participation is competitive, the openness and competitiveness of executive recruitment, and the extent to which the chief executive is subject to institutional constraints. Those three components are converted into a 21 point scale for each year, with the most autocratic countries receiving a score of -10 (e.g. North Korea) and the most democratic countries receiving a score of +10 (e.g. Japan).<sup>12</sup> For the purposes of our analysis we convert the polity2 index into a positive scale ranging from 1 to 21. For all its merits the polity2 index does have one major drawback. Namely it does not take into account the proportion of the population that is permitted to participate in the selection of public officials (Munck and Verkuilen 2002).<sup>13</sup> With that shortcoming in mind we use electoral participation to estimate the proportion of citizens that are

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<sup>10</sup> On the latter point see Ross (2006).

<sup>11</sup> Because the Polity IV data set does not include countries with populations less than 500,000 we utilized the expanded version of that data set compiled by Gleditsch (2008). Even so the expanded data set does not cover those countries with populations less than 250,000.

<sup>12</sup> The polity2 index has become the standard measure of democracy in the literature and it is probably less susceptible to measurement error than its main rivals. It is also strongly correlated with the main alternatives. For an evaluation of the various indices see Munck and Verkuilen (2002).

<sup>13</sup> Thus, for example, the polity2 index does not take into account the absence of universal suffrage in South Africa before 1994 and at the federal level in Switzerland before 1971.

permitted to participate in the political process.<sup>14</sup> However, the obvious drawback of using electoral participation is that it includes voter turnout in uncompetitive elections (e.g. elections in one-party states). Thus, in order to overcome the shortcomings of both these measures of democracy, we weight the extent of electoral participation by the degree of competitiveness in the selection of public officials. More precisely, we multiply electoral participation by the polity2 score divided by the maximum polity2 score of 21. The resulting regime variable entails that electoral participation retains its full value in those countries that are fully democratic, whereas it is weighted downwards in those countries where there is insufficient competition in the recruitment of political leaders.<sup>15</sup>

For *media freedom* we use the 100 point index that has been compiled by Freedom House since 1993 (Freedom House 2014a). We invert the scale so that a score of 100 represents full media freedom and a score of 0 represents the complete absence of media freedom. The Freedom House index is designed to capture legal restrictions on media content, political pressure on the media and the government's economic influence over the media (Freedom House 2014b).<sup>16</sup> It should be noted that the polity2 index does not explicitly take account of civil liberties such as media freedom (Jagers and Gurr 1995).<sup>17</sup>

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<sup>14</sup> Electoral participation is the proportion of the total population voting in elections and is taken from Vanhanen (2014). It may be argued that that variable will be affected by the size of the young population in each country. Reassuringly our results held when we adjusted the participation data so that it only covered the population aged 18 years and above.

<sup>15</sup> It may be argued that electoral participation is influenced by factors other than simply the extent of enfranchisement (e.g. electoral system). Note, however, that most of those factors are country specific and so they are controlled for by the model specification. Electoral rules, for example, rarely change. Moreover, at a conceptual level it may be argued that higher participation (in a democratic context) is better irrespective of the reasons for that higher rate of participation. Finally, it may be argued that our regime variable will be insensitive to any transitions from a high participation autocracy (e.g. one-party states) to a low participation democracy, and vice versa. Upon examining the data set we found that in those cases where such a transition took place the change in the polity2 index was such that there was a marked change in the competitive participation score. Reassuringly, we found that our results remain qualitatively similar when we used the polity2 index by itself as the measure of regime type.

<sup>16</sup> Freedom House assigned greater weight to the political pressure component during the years 1993 to 1995. We, therefore, recalculate the index for those years to ensure consistency.

<sup>17</sup> Note also that there is a strong correlation between the Freedom House index of press freedom and the measures recently initiated by Reporters Sans Frontières and the International Research and Exchanges Board (Becker et al, 2007). Furthermore, there is a reasonably strong correlation between the Freedom House measure and people's perception of the

Finally, the fixed-effect specification that we use helps to mitigate any omitted variable bias. Nevertheless, it is necessary to control for those time-varying factors that might be simultaneously determining the extent of democracy or media freedom as well as the level of under-5 mortality. For that reason we include the log of *income*, *urbanization*, *trade openness* and *oil and gas rents per capita* in order to control for wealth, economic development, exposure to international competition, and access to non-tax revenue.<sup>18</sup> Tables 1 reports the summary statistics for the variables used in the estimation model.

### Data set

After constructing the data set we found that observations were missing for a small proportion of country-years (see Table 1). Deleting those cases with missing values may deprive the model of relevant information. In addition, it may bias the results if there is a systematic difference between the observed and unobserved data.<sup>19</sup> Thus, rather than applying the method of listwise deletion, we use the Amelia multiple imputation algorithm to estimate the missing values (Honaker, King, and Blackwell 2013).<sup>20</sup> Using the multiple imputation process meant we were able to generate a balanced panel for the 167

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degree of media freedom that prevails in their country. See English and Becker (2012) and Nisbet and Stoycheff (2011). That is to say, the judgment of experts appears to coincide with perception of non-experts.

<sup>18</sup> Real gross domestic product per capita (in constant 2005 dollars) and total trade as a proportion of gross domestic product are taken from the Penn World Table 7.1 (Heston, Summers, and Aten 2012). Share of population living in urban areas is taken from the World Development Indicators (World Bank 2013). Finally, each country's oil and gas rents per capita (in 2000 constant dollars) are taken from the dataset compiled by Michael Ross (2013.). Ross calculates rents by deducting extractions costs from the total value of oil and natural gas production.

<sup>19</sup> Hollyer, Rosendorff, and Vreeland (2011), for example, find that there is a sizeable statistical association between regime type and data missing from the World Bank's World Development Indicators.

<sup>20</sup> The multiple imputation process uses the observed values to generate multiple estimates for each missing value. The variation between each imputed value is intended to reflect the estimated level of uncertainty in predicting each missing value. See Honaker and King (2010) and Schafer (1997). We employed an imputation model that included the log transformation of the time-varying control variables to generate five "complete" data sets. We then ran our regression model for each of those data sets. All variables in the regression model were included in the imputation model. Finally, we combined the estimation results by using a procedure outlined by King et al. (2001). A single coefficient was produced for each independent variable by taking the average of the estimates produced by each imputed data set, while a single standard error for each coefficient was produced by using a formula that takes into account variance both within and across each imputed data set.

countries that were extant in the world between 1994-2011 and had populations greater than 250,000.

#### 4. Results

Is the extent to which the poor benefit from democracy dependent on whether there is an independent and uncensored media? The results of our analysis are presented in Table 2. As we can see from column 1 all the variables of interest are statistically significant and carry the expected sign. From the coefficient of the interaction term we can see that the marginal negative effect of democracy on under-5 mortality over the short-run increases as the media becomes freer. The constitutive term for *competitive participation* represents the marginal effect of that variable on under-5 mortality when there is no media freedom. Equally, the constitutive term for *media freedom* represents the marginal effect of that variable when the regime is fully autocratic (e.g. North Korea). Note, however, it would be highly unusual for a fully autocratic country to permit any degree of media freedom.

Figure 1 shows how the marginal effect of *competitive participation* on *under-5 mortality* is modified by the level of media freedom in the short-run. The vertical axis on the left indicates the magnitude of the marginal effect. The marginal effect of the regime variable is statistically significant for those media freedom levels in which both 95% confidence intervals are either above or below the zero line. As we can see the marginal negative effect of competitive participation increases as media freedom increases. Moreover, the average marginal effect of competitive participation is not negative until media freedom reaches a score of 69 on the 100 point scale. According to Freedom House's own general classification a country's media is free if it achieves a score above 69. That in turn suggests that an increase in the level of democracy will not reduce under-5 mortality if a country's media are unfree (score below 40) or partly free (score between 40 and 69). This is consistent with our theoretical claim that democracy, by itself, does not predict a reduction in deprivation.

We have superimposed a histogram on to figure 1 showing the frequency distribution in the sample for media freedom (Berry, Golder, and Milton 2012). The scale for the distribution is given on the vertical axis on the right-hand side of the graph. As we can see the observations in the sample are

reasonably evenly spread between 0 and 95 on the 100-point scale, suggesting that our inferences are valid within that range.

These results indicate that the negative association between competitive participation and under-5 mortality rises as media freedom increases. That finding, combined with the observation that democracies afford greater protection to media freedom, suggests that democracies have a comparative advantage with respect to deprivation-reduction. In other words, it lends support to the claim that the greater communication openness produced by democratic states enhances the government's ability to tackle deprivation.

A potential problem with the above estimations is that the combination of fixed effects with the lag of the dependent variable may bias the results (Nickell 1981). That source of bias diminishes as the number of time periods increases. With a 15 year panel, therefore, we do not expect there to be much correlation between the country specific effects and the lagged dependent variable. Nevertheless, for the sake of robustness, we re-estimated the model using the Arellano-Bond generalized method-of-moments (GMM) estimator (Arellano and Bond 1991). Forward orthogonal deviations were used to transform the data (Arellano and Bover 1995; Wawro 2002). As we can see from column 2 of Table 2 our results are qualitatively similar to our baseline model. That is consistent with our expectation that the within estimator produces at most a small bias. In addition, the serial correlation and Sargan diagnostic tests indicate that the GMM model has been correctly specified. That is to say, there is evidence of negative first-order serial correlation but not second-order serial correlation, implying that the errors are serially uncorrelated. Equally, the results of the Sargan test imply that we do not have evidence to reject the null hypothesis that the overidentifying restrictions are valid.

Finally, we examined whether our results held when multiple imputation was not used to estimate the missing values in the data set. Reassuringly the results (not reported here) we obtained using an unbalanced panel, for the within and Arellano-Bond estimations, were very similar to the results we obtained using the imputed data set.

## 5. Conclusion



There are a growing number of cross-country studies that suggest that a person living in a democracy will, all things considered, enjoy a better standard of living than would be the case if they were living in an autocracy. What is not clear, however, is whether that can be said for a person who is one of the poorest members of a democratic society. Democratic leaders must appease a wider range of supporters than autocratic leaders in order to ensure their political survival. However, the leading political economy models imply that neither type of leader need win the support of the low-income group in order to stay in power. If that is correct then the introduction of universal suffrage may not lead to an improvement in the well-being of the poorest.

In response we have argued that democratic governments have a greater incentive and capacity to reduce deprivation. In the first place, they have more of an incentive to pursue the economic benefits associated with deprivation-reduction. That is, they have reason to improve the living standards of the poorest even if they do not require their votes in order to secure a winning majority. In the second place, democracies are better at redirecting welfare-enhancing resources to the poorest because media freedom enhances government responsiveness. We hypothesize, therefore, that deprivation-reduction is the result of the interaction between democracy and media freedom.

In support of that explanatory thesis we have found that the negative association between level of democracy and deprivation, as measured by under-5 mortality, increases as the level of media freedom rises. That finding suggests that the extent to which the poorest citizens are able to benefit from public policy is, at least in part, dependent on the extent to which the government is vulnerable to criticism from independent and uncensored media.

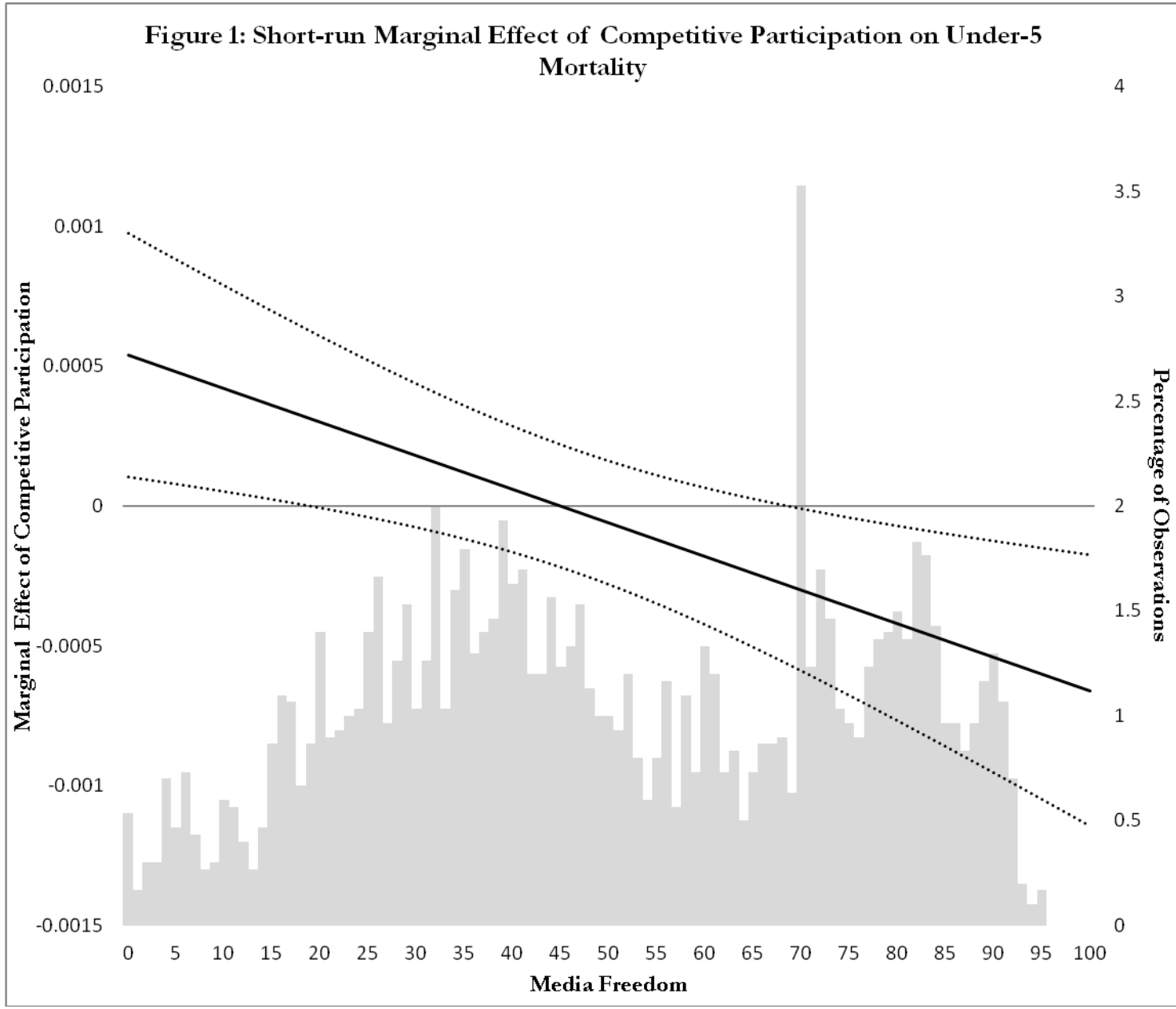
**Table 1: Summary Statistics**

<b>Variable Name</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Max.</b>	<b>Min.</b>	<b>Missing (%)</b>
Competitive Participation	26.41	20.1	70	0	0
Media Freedom	51.57	24.54	95	0	0.2
Under-5 Mortality	55.37	56.12	291.6	2.3	0
Urbanization	53.69	23.29	100	6.84	0
Income	10740	13690	136200	160.9	1.23
Trade openness	80.75	46.4	433.05	1.76	1.23
Oil & gas rents	653.3	2607	40510	0	0.07

**Table 3: Communication Openness and Under-5 Mortality**

	(1)	(2)
	<i>Within estimates</i>	<i>Arellano-Bond estimates</i>
Lag dependent variable (log)	0.94003*** (0.00523)	0.81318*** (0.01836)
Competitive Participation	0.00055* (0.00022)	0.00098*** (0.00037)
Media Freedom	0.00042*** (0.00012)	0.00056*** (0.0002)
Competitive Participation × Media freedom	-0.00001** (0.000004)	-0.00002*** (0.00001)
Income (log)	-0.01826*** (0.0041)	-0.09548*** (0.02779)
Urbanization (log)	-0.0474*** (0.01147)	-0.28901*** (0.09413)
Trade openness (log)	-0.00828* (0.00328)	-0.05658*** (0.01915)
Oil & gas rents (log)	0.00306** (0.00109)	-0.00154 (0.00317)
Year dummies	✓	✓
Countries	167	167
Years	1994-2011	1994-2011
Observations	2839	2672
1st-order serial correlation test		-13.516 (0.00)
2nd-order serial correlation test		0.384 (0.6284)
Sargan test (prob> $\chi^2$ )		0.7236
No. of Instruments		61

*Notes:* Robust standard clustered at country level errors are reported in parenthesis. Each country-year represents a single observation. Column (1) results produced using country fixed-effects. Column (2) results produced using Arellano-Bond GMM estimator with forward orthogonal deviations transformation. \*\*\* significant at 1%; \*\* 5%; \* 10%



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